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The JOURNAL of GEOGRAPHY

A MAGAZINE FOR TEACHERS

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IN THIS ISSUE

ANNOUNCEMENT OF PRIZE ESSAYS AND THE POLICY OF THE JOURNAL OF GEOGRAPHY

OUTLINE OF A STUDY OF EUROPE FROM THE POINT OF VIEW OF THE WAR
J. W. HUBBARD

THE NEW BOUNDARIES OF GERMANY

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A MAGAZINE FOR TEACHERS

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VOLUME XVIII SEPTEMBER, 1919 NUMBER 6

ANNOUNCEMENT OF PRIZE ESSAYS AND THE POLICY OF THE JOURNAL OF GEOGRAPHY

BY THE EDITORS

During the coming year the American Geographical Society offers three prizes for the best essays, one each in the following groups of subjects:

1. A prize of $100 for the best outline of a lesson for pupils of any grade in the grammar school, junior high school or high school on one of the following topics:
   - (*a*) South Africa or Brazil
   - (*b*) Iberian Peninsula or Italy or the Balkans
   - (*c*) Either the political or the commercial geography of the Baltic
2. A prize of $100 for the best criticism of the present type of textbook presentation of any subject in geography.
3. A prize of $100 for the best essay illustrating how a given geographical subject should be written up for the teacher. This should be not an outline but an actual presentation. It should not exceed four thousand words in length.

Competition is open to teachers of all grades from the grammar school to the university. The judges will be the editorial staff of the American Geographical Society, who, before making the awards, will consult an advisory committee of the Society as well as educators and various specialists in geography. The award will be announced in the May, 1920, number of the *Journal*, and manuscripts should be in hand by February 15, 1920. All manuscripts submitted will be the property of the American Geo-

graphical Society in the sense that the Society retains the right to publish any or all of them at a later time. The three successful essays will be printed in the May number.

Every teacher who sees this announcement can render a service to geography by making the project known to other teachers of the subject to the end that there may be a large and worthy response to this opportunity, not merely to win a money prize but also to participate in the improvement of the subject. Here is a field of usefulness particularly suited to the activities of the local or state branches of the National Council of Geography Teachers.

POLICY OF THE JOURNAL

It seems fitting that in announcing herewith a prize plan, which we hope to continue in future years, we should state the policy of the *Journal* with respect to its articles, for this may be of help both to the teacher and the contributor.

Like every other subject, geography has changed greatly in the past ten years. The human element has come into great prominence; the purely physiographic element, once dominant, has taken a subordinate position. The subject is tending to become integrated with the "humanities" rather than with natural science, thereby gaining interest because the most interesting thing in the world is human life. What we say of the policy of the *Journal* reflects, we think, the policy of the geographers that are today making the subject.

The type of article and the type of instruction which seem most effective for the teacher, present their object with little direct reference to method. An interesting and inspiring teacher is the best example of method. Much of so-called sacrosanct "method" is pure humbug. The teaching of not a few educators is based upon what Quiller-Couch would call the "jargon" of a caste; their followers learn the tricks and language that correspond to the ritual of an old-fashioned order. The ritual learned, one is prepared to teach. Far be it from us to decry all method, but the greatest disservice to geography that we have ever witnessed has been done by educators who are fundamentally ignorant of the subject matter and profoundly unmoved by any event dating from less than twenty years ago.

SHALL WE TEACH SUBJECT OR METHOD?

Ever since training schools for teachers were founded there has been carried on a discussion whether it is better to tell prospective teachers how to teach a subject or to teach them the subject. Those who hold that practical teaching exercises should be the chief, if not the exclusive, object of a training course base their contention on the short time available for training and on the simple needs of the grade teacher and even the high-school teacher. They do not ever expect their students to go a-voyaging in the realm of the unknown for the purposes of exploration and discovery. They regard that as the function of higher learning and maturer years. The pragmatic, the practical, is always their goal.

On the other hand are the training teachers that have their eye on the subject rather than on the method and have themselves felt the inspiration of great teachers absorbed in their subject who needed not to give special emphasis to method because the subject was so interwoven with the method that it was always full of color and inspiration. In their view the introduction of method as a thing apart is the introduction of a skeleton when the audience expects a gymnast, the exhibition of an architect's drawing rather than a finished edifice.

The fortunate men and women who have the genius both to show us how to teach and to lead us at the same time to the frontiers of geography, illustrate the policy of the *Journal*. In the right hands there is a fringe of novelty and an element of exploration in method as well as in content. The difficulty, as we have said, is that method is too often merely another word for the dogmas of creed. And the teacher of method too often gives us an inspiring description of Pestalozzi in one class and a barren subject outline of no merit in another. Method, in most hands, is mere theory when turned to practical uses.

"HOW CAN I TEACH ARABIA?"

In order to be quite clear let us turn to some actual case for illustration. Every course in elementary geography includes some knowledge of the world's countries. For example the teacher asks "How can I teach Arabia?" and forthwith develops an outline

that provides for a discussion of the area, population, resources, location, climate, soil, and communications of that huge but remote and desert and thinly populated country, about which reference books are rare and textbooks vague and brief. Rarely are these categories extended to make the slightest distinction between Arabia and North Africa or, for that matter, New Zealand or Alaska. The sole point of difference between successive outlines is that the facts themselves are different. The main headings are generally the same.

Now this is certainly a very logical way to proceed, and it is always easy and comfortable to defend a logical method. That is why our textbooks of geography have practically not changed at all for the past forty years except that the maps and pictures are different and better and certainly more numerous. In spite of all the heralding that has been done, the fact is that the main outlines of the subject have remained the same. Brewer's and Maury's texts are essentially like those of the present. Now this is to our minds entirely wrong. Arabia and the Sahara, or Alaska, are fundamentally different, and to fit them to the same bed is to stretch unmercifully the joints of the one and to cut off the feet of the other.

Sheikh, Shepherd and Crescent

The heart of Arabia is desert; about the border is a girdle of verdure. Wherever there is water and permanent pasture there are towns; and one of these, Mecca, is the religious capital of over 247,000,000 Mohammedans scattered all the way from southern Russia to Zanzibar and beyond, and from the old Moorish castles in Morocco on the edge of the Atlantic to India and the Philippines. It was only a century ago that the Moslem held in his grasp a realm second in size only to the Russian and British empires. In this realm the sheikh and the shepherd and the crescent have been the symbols of power. Yet the country is very dry and barren and largely uninhabited. It is surely a most extraordinary circumstance that so much religious power and faith should have emanated from a wilderness.

The explanation lies partly in the land and partly in the race. It is probable that the land made the race; but the process of race

making is so much slower than the processes of history that we had better separate these two elements. The study of the race would lead to a very long discussion, and so we shall pass that by for the present and look merely at the land and the people of today. Being desert Arabia is very difficult to cross. Not until late years has any European explorer really penetrated it. It has been fully as isolated as Tibet. Yet the Arab crossed it again and again; isolated travelers, tribes with flocks, armed marauders and bandits, emissaries from Mecca, armies of Arab horsemen bent on conquest. It was a barrier to the outsider; but it was home to the Arab.

During the war mounted Arabians fought with the British army and co-operated in the capture of Damascus and the conquest of Syria. For the first time in hundreds of years there is again an Arab kingdom, the Kingdom of the Hedjaz and its king is also Sherif of Mecca; that is, he is the head of the Mohammedans the world over. On the side of the Persian Gulf the British have occupied Koweit, policed the coast in order to put down piracy, and pushed their control far up into the Arab country of Mesopotamia. France has Syria, which is populated chiefly by Moslem Arabs; and Palestine is to become a homeland of the Jews under British protection. The Suez Canal and Aden are in the hands of the British, likewise Sokotra, the island at the broad entrance to the Red Sea, and the island of Perim at the narrow passage opposite Aden.

Thus we see that Arabia is not merely the home of some Arabs who lead a life characteristic of the desert but is also a huge land mass athwart the road to India; it is the spiritual home of millions of fanatical Mohammedans who have shown a singular capacity for making political trouble; it flanks a number of the great historical thoroughfares of commerce.

THE GREAT ISSUES IN ARABIAN LIFE

This is a mere sketch of the main features that give Arabia prominence in the world of today, that relate it to the great currents of life flowing around it and threatened at times with interruption and danger by a turbulent people. To follow out each of these main lines of thought would lead one into history and

ethnography and current international politics as well as economics and geography. Such inseparable and absorbing intricacies ought to paralyze any effort to fit the great issues of the life of Arabia into the rigid framework of soils, climate, relief, and location. The reiterated and meaningless use of these stereotyped terms is an invitation to death, not to life. They are only legitimate when they become the convenient sub-labels of a lively theme.

What we need to do is to get altogether away from the skeleton in molding the form of our lesson. We must recognize that the skeleton is there, but we must not continually talk and think in terms of the bones of the subject. And the only way to do that is to recognize and develop the big themes that compose the subject. This is to treat it, from the standpoint of pedagogy, in an unsystematic way; but as betweeen system and life there should not be much hesitation in choosing. The whole story of Arabia should be built up around Arab character and life. There is in the one a force that has at times ruled a large share of the known world; there is in the other a restless, fanatical quality that is bred of the desert uncertainties and the continuous movements of the inner desert tribes impelled by the droughts that smite the land. The hard environment has bred a hardy race; it has at the same time given it a turbulence of character that has led to the disintegration of every political union of the Arabs that has been attempted. The result is that, with the growth of great trading enterprises and imperial schemes, the foreigner has come in and played upon the fickle political thought of the Arab and taken advantage of it. What was once a great empire has become to a large extent spheres of "influence" and of "economic penetration" for the benefit of the great powers of western Europe.

This is not all of Arabia, but it is the part that enters most prominently into the life of the world today. There are many things included in the geography of Arabia that do not tie up with the themes sketched above. They affect the local or provincial life of the people and deserve to be given second place. Many of them are interesting and even fascinating in character; some are curious or even bizarre. They find their best illustration in the variations among the settled Arabs of the border regions.

They are what make the Arab different in detail; but the things that make him different in ideals and ideas and character are the things upon which we must place chief emphasis if we are not to give a distorted view of the whole.

The world has now more than ever been drawn together. "No man can live a life apart"; and the geographer has made a contribution to the common life as he has traced some of the great issues of it back to the primary forces of land and sea and air so that men understand them better and are the better prepared to fight some and encourage others.

EVERY REGION HAS ITS DISTINCTIVE FEATURES AND BIG ISSUES

Every region in the world has its distinctive features, its big issues. These must be brought to the front, and that in our conception is the best method that can be devised. If that method were adopted, say, in the presentation of the various groups of states in the United States we should not have as now a jumble of unrelated facts encyclopedic in character and dry and meaningless in form. Each region is distinctive. To treat the cities and products of all according to a common scheme is to create an impression of uniformity that destroys the value of the picture.

This point of view may be illustrated by our common descriptions of people. If asked to describe an acquaintance we do not begin with the length of his arm bones and the shape of his skull. We describe one in terms of his smile and his sunny disposition, another by the heavy and unhappy character of his humor, a third by the knowledge of things that he displays, and so on. If we should standardize our descriptions so that everybody should always use the same terms in describing people, what a silly and prosaic and pretentious thing it would be. It was sound advice that Professor Shaler used to give about learning the different types of rocks: we should learn to know them just as we learn to know persons' faces, by their striking and obvious characters. Afterward we could learn the different mineral compositions and the exceptional forms. Much of alleged learning is a show of learning. The big essentials are lost in a morass of words, jargon has been substituted for understanding.

"If all the world were apple pie and all the seas were ink," the

problems of geography would be simple. As they stand in the world today they are as complex as life itself. Here man has been turned out upon the sea for a living, there he has been taken into the very bosom of the soil. Human life has flowed around the mountains and into regions of eternal ice. It has also been gathered together into great foci or centers which have become organisms with definite characteristics—the cities of the world. In each environment man has become a slightly different creature and, whenever he has again turned outward and encountered his fellows in their different environments, he has rarely been able to see them in any other light than as enemies.

It is the peculiar province of geography to make clear these facts and, if you like, through understanding them to lead men to take a more tolerant view of one another. When geography shall have taught men not to hate one another just because they are different but to show why they are different and even interesting, it may have cleared away some of the misunderstandings of our times. Some people say that it is the same old world and that to the end of time the old problems will arise—only in new forms; but we cannot go far wrong in working for a new time of better understanding.

If the new geography could concentrate its attention on the big issues of each problem, there would be a chance that it would be no longer dry but interesting and that it could make a contribution to the welfare of mankind. It will never do this so long as it sticks to the bones of the subject and so long as it is taught by formula. Once history was taught in that way, but modern historians have chosen a wiser course. The leaven of change has hardly begun to work in the field of geography.

Of course the chief difficulty, you will say at once, is the difficulty of sources. Where can one get at once the right point of view and especially where can one get it quickly, for it is recognized that the teacher has very little time in which to do the wide reading in a given subject that is demanded of the scholar and the creator of the subject. It is here that the *Journal of Geography* hopes to do its greatest service. Every article in it will be challenged by the editors to see if it answers to the test of scholarship and at the same time presents a point of view that gives life and a balanced judgment to the subject it presents.

THE NEW BOUNDARIES OF GERMANY

Before the war the German Empire aggregated an area of some 209,000 square miles with a population in round numbers of 65,000,000 (1910): colonies and dependencies added an area of over 1,000,000 square miles and a population estimated at 14,000,000. By the Treaty of Peace Germany loses not only her entire foreign possessions but considerable territory in Europe with a numerous population and valuable resources. The accompanying map shows this latter territorial loss as defined in the Treaty signed by Germany.[1]

THE BELGIAN-GERMAN FRONTIER

Germany recognizes the full sovereignty of Belgium over Neutral Moresnet, a tiny territory that has maintained a semi-independent state since 1814. The adjoining village of Prussian Moresnet is also ceded. Germany further renounces in favor of Belgium rights over the districts of Eupen and Malmédy. Six months after the Treaty takes effect the inhabitants of these districts are to have the opportunity "to record in writing a desire to see the whole or part of it remain under German sovereignty." Eupen and Malmédy lie about the frontier between French and German speech, the western part of Malmédy being inhabited by French-speaking people. Eupen falls within the area of the Aix coalfield. The two districts also include some 16,000 acres of forest owned by the state, a resource that will compensate in some measure for the devastation of Belgian forests.

ALSACE-LORRAINE

The cession of Alsace-Lorraine recognizes "the moral obligation to redress the wrong done by Germany in 1871." The frontier between France and Germany is restored as before that date. Germany thus loses an area of 5,600 square miles which before the war was occupied by a population of about 2,000,000. The economic loss is serious. Both Alsace and Lorraine, especially the

[1] Compare the map published in the *Geographical Review*, May, 1919, showing the new boundaries of Germany according to the Peace Treaty in its original form, i. e. as presented to the German Government. Readjustments of the line were made in West Prussia and Posen and Upper Silesia was pronounced a plebiscite area.

FIG. 1—The Marne-Rhine canal at its highest point in the crossing of the Vosges. The canal gives a water connection between Alsace-Lorraine and Paris and the industrial centers of Northern France and Belgium. (Photograph reproduced from the article Alsace-Lorraine and Europe, by Lucien Gallois, *Geogr. Rev.*, Vol. 6, 1918, pp. 89-115.)

Vol. 6, 1918, pp. 89-115.)

FIG. 2—Strasbourg: the old town clustered round the cathedral. As the name implies Strasbourg is a city of roads. Its ancient importance is due to its position at the junction of the Rhine-Danube highway and the road to Paris. The town has grown rapidly of late years and new sections have been added to the ancient city. (Photograph reproduced from the article Alsace-Lorraine and Europe, by Lucien Gallois, *Geogr. Rev.*, Vol. 6, 1918, pp. 89-115.)

former, are well-cultivated agricultural lands. The Alsatian plain is a large producer of grains, hay and potatoes, and the vineyards of the foothills of the Vosges and those of the Moselle valley are well known. But the loss lies more particularly in the subsoil than in the soil, in the resources of iron, coal, potash, petroleum, salt.[2] While the salt deposits of Lorraine and the petroleum of the Pechelbronn basin north of Strasbourg are of minor importance, the first three named minerals are found here on a scale that gives them great economic significance. The known potash deposits of the world are very few in number. The famous Stassfurt (Anhalt) mines gave Germany a pre-war monopoly (95 per cent) of the world's output and that country had little incentive to develop the Alsatian deposits discovered 15 years ago. The Alsatian deposits, however, are said to be about equal in extent to those of Stassfurt with which they will now enter into competition.

Three-quarters of the German production of iron-ore came from the great iron field which lies on either side the former frontier in Lorraine. In 1913 this amounted to 21,000,000 metric tons (of 2,204 lbs.), half of the total used that year in the German factories. Value of the raw material alone does not convey an adequate idea of the loss: converted into cast iron or steel, elaborated into hardware, the value is enormously increased and in Lorraine Germany loses not only a great ore-producing region but a metal-working region. In 1913 German Lorraine produced 3,869,000 tons of iron and 2,286,000 tons of steel. Before passing to the question of coal it should also be noted that Germany's industrial loss includes the textiles of Alsace, the cotton mills of which ranked foremost in the Empire.

THE SAAR BASIN

In 1913, 17,500,000 metric tons of coal were mined in the Saar Basin. This output, about 6 per cent of the total production for the entire country, is, however, said to be susceptible of considerable increase: the field is estimated to possess 17 per cent of the actual German reserve while the probable reserve is stated to

[2] See the map "Lorraine and Alsace: Territorial Changes and Mineral Resources" accompanying the article Alsace-Lorraine and Europe by Lucien Gallois, *Geogr. Rev.*, August, 1918. This map, scale 1:1,500,000, printed in colors, may be obtained from the American Geographical Society, price 25 cents.

be great. The mines of the southwestern portion of the basin, producing about 20 per cent of the total output, are included in

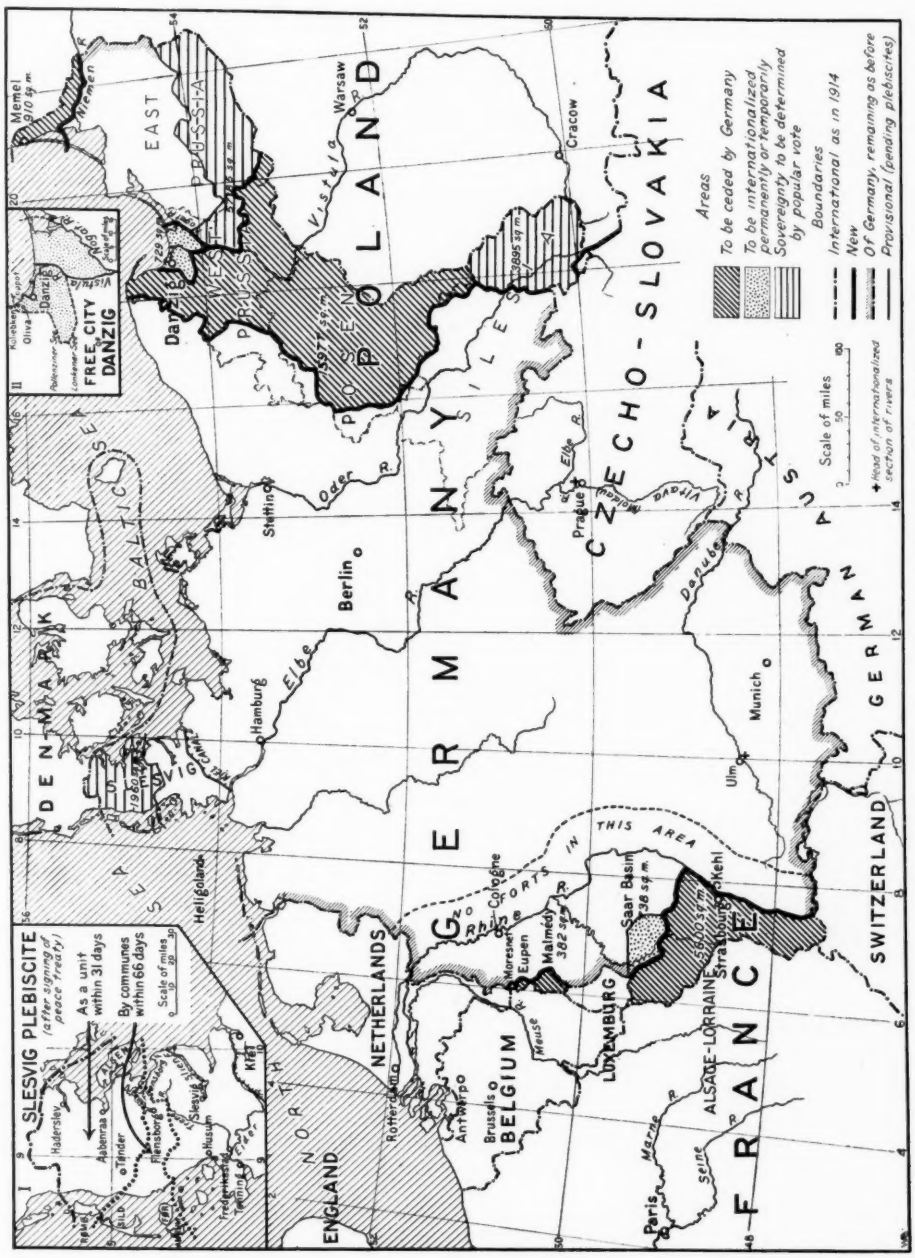

FIG. 3.—Map showing the new boundaries of Germany: Scale, 1:9,000,000.

Lorraine. Regarding the mines in the remaining 738 square miles of the basin, the Treaty provides that Germany shall cede them

to France in full and absolute possession "as compensation for the destruction of the coal-mines in the north of France and as part payment towards the total reparation due from Germany for the damage resulting from the war." The territory itself is to be administered for 15 years by an international commission, following which a plebiscite will be taken to determine the future control, whether the international régime be maintained or the territory go to France or Germany. In the last event Germany shall have the right to purchase back the mines.

THE EASTERN BOUNDARY: POLAND

Germany's greatest territorial loss is on the eastern frontier. Here she loses outright an area of 17,600 square miles whose pre-war population amounted to something like 3,250,000. This includes the area north of the Niemen with the port of Memel, the fate of which will be settled by the Allies and Associated Powers according to the wishes of the inhabitants. The greater portions of West Prussia and Posen go to Poland. Danzig, with a population mainly German, but vitally necessary as the outlet of Poland (see May *Journal,* p. 193), becomes a Free City. The greater portion of Upper Silesia, nearly 4,000 square miles, is a plebiscite area, the inhabitants of which will vote for attachment to Poland or Germany. The pre-war population of this area was approximately 2,000,000. Another plebiscite area where Slav and Teuton are mixed has been defined east of the Vistula and in the southern part of East Prussia; pre-war population 750,000. The remaining portion of East Prussia with its port of Königsberg, solidly German in population, is thus isolated from the rest of Germany.

East Prussia apart, the new eastern frontier of Germany is, broadly speaking, an ethnic line. Strategically a point of special interest is the great wedge that the addition of Posen to Poland makes in the north German plain, where the frontier is only 100 miles east of Berlin, a fact that incidentally reveals the eccentricity of Berlin as the German capital. The area ceded to Poland is an agricultural region growing cereals—large crops of rye and oats—, beets and potatoes and with an industrial production of sugar, starch and alcohol. The plebiscite area of Upper Silesia is richer agricultural land and the rural population is predominantly

Polish, but economic questions complicate matters. Upper Silesia is well endowed with mineral wealth. Almost one-quarter (in 1913 about 43,000,000 metric tons) of the coal mined in Germany comes from Upper Silesian mines, a part of the great coalfield lying about the point where met the three former empires, German, Russian, and Austro-Hungarian. Besides giving rise to the industries of Upper Silesia the coal, easily carried down the Oder, supplies the industries of Lower Silesia centering around Breslau. The zinc deposits of Silesia are the richest in Europe; they placed Germany second (following the United States) among the zinc-producing countries of the world.

DENMARK

Slesvig-Holstein was conquered by Prussia and taken from Denmark in 1864. Holstein is properly attached to the German state, but Slesvig includes a large Danish-speaking population which attains a decided majority in the north. The area in which the plebiscite will be taken covers nearly 2,000 square miles and includes a population of some 300,000. The country is non-industrial and of no special significance to Germany.

CENTRAL EUROPEAN WATERWAYS

Of recent years Germany had been gaining increasing dominance over the waterways of Central Europe. Though freedom of navigation of the Rhine was established in 1815 and confirmed at the Conference of Mannheim, 1868, that freedom has been steadily infringed since 1871. Further, by the projected Rhine-Danube canal Germany aimed at control of a great European artery from North Sea to Black Sea. Still more recently Germany has been interested in a scheme to unite the Ukranian waterways with the German systems and provide a through way from the Black Sea to the Baltic at Danzig and Königsberg. The Peace Treaty contains clauses providing for freedom of navigation on the German portions of these and other waterways, existing and proposed.

The restoration of France as a riparian power along the Rhine breaks German domination of that river. With Alsace Germany loses Strasbourg, a port of growing importance. It may be noted that to insure development of Strasbourg the port of Kehl on the

German (Baden) side of the river is to be administered with it as a single unit for a space of 7 to 10 years. The Elbe (with the Moldau) is to be internationalized below Prague; the Oder below Oppeln; the Niemen below Grodno; and the Danube below Ulm. The same provision will apply to the Rhine-Danube waterway if constructed.

OUTLINE OF A STUDY OF EUROPE FROM THE POINT OF VIEW OF THE WAR

By J. W. HUBBARD
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The need for a knowledge of European history and geography has already been urged in the *Journal*. Its importance in the training of the truly patriotic—that is the enlightened and conscientious—citizen was set forth in the article "Geography and Reconstruction in Education" by L. O. Packard (Jan., 1919). From this new point of view a new method of approach may well be sought. It is of course a truism to say that a subject to be interesting to a child must be related to his environment in the real life outside of the school room. The roots of the war lie deep in the history and geography of Europe and Asia. Its events have furnished the principal topics of thought and conversation on the street and in the home. Relating geography to the war is an effective method of rousing a vital interest in the subject.

THREE RELATED LINES OF WORK

Three divisions of the work need to be emphasized, not as separate parts but as parts closely interwoven and correlated:

(1) *Map study.* Location is of great importance for the understanding of military and political movements. The whole world is studying maps with intense interest. Existing textbook maps may be somewhat inadequate, but they can be supplemented by the wealth of war maps published by newspapers and magazines.

(2) *Resources of the nations that were at war.* What each nation can contribute in men, money, raw materials, or finished products depends upon many physical and economic factors.

(3) *Life of the people.* An intimate knowledge of the life of a people is essential for any sympathetic understanding of their national point of view. The textbooks are entirely inadequate as a source of this information, but fortunately much supplementary material is available.

To give life and meaning to the topics use should be made of every available source of illustration and information—pictures cut from magazines, picture post cards, stereoscope views, lantern slides, moving pictures, soldiers' letters, geographical readers, periodical literature, newspaper clippings, war maps, large scale atlas maps.

The Outline

A large part of the outline can be worked out from maps and descriptions in whatever textbook the school uses. If geographical readers are at all available they should be used to enlarge the brief accounts given in the text.

Examples of special references are given in the outline. In these references the first figure indicates the work referred to in the list given at the end of the article, the following figures the page numbers.

I. *Position of Europe*

Locate Eurasia with reference to North America. Make comparisons in latitude; especially, find important cities of Europe and North America on corresponding latitudes.

II. *Distances of principal war sections from New York*

Locate Havre, France. If our transports were sent to Havre, about how far would they travel? (Steamship lines, Ref. 3, 732; 2, 539.) What is the least time that would be required? Some of our troops were sent to Archangel in northern Russia: locate this port. To aid the Russians in Siberia some of our soldiers were sent from Manila, P. I., to Vladivostok on the Pacific coast of Siberia: why were they sent from there rather than from the United States?

If Camp Devens soldiers were sent from Boston to Vladivostok, how far would they travel by rail to San Francisco? How far by sea from San Francisco to Vladivostok? (Ref. 3, 773; 2, 546.) If they were to travel westward from Boston all the way by sea, how much distance could be saved by going through the Panama Canal?

III. *Distribution of belligerent countries in the war*

List of the Allies and of the Central Powers. Locate each. What countries in Europe were neutral? Locate. On an outline map of the world color in red all the countries that have been in the war.

IV. *Navies of the belligerents*

(A) Fleets

(a) Comparative size at the beginning of the war

Make a list, in order of size, showing tonnage and number of ships. (Ref. 7, Year Book 1913.) How does the United States rank? Germany? The United Kingdom? Russia? Suggest a reason for Austria's small fleet.

(b) Why the British fleet is so large

(1) Protection of colonies

Locate the most important British colonies. Compare the British colonial empire with that of France. (Ref. 1.)

(2) Protection of supplies

Kinds of manufacturing in the British Isles? What raw materials must be imported? Why must food be brought in? (Ref. 2, 357, 360.)

(3) Insular location

(c) German fleet

(1) Its imprisonment

Early in the war the German fleet was "bottled up" in the Kaiser Wilhelm Canal. Locate. What waters does it connect? Describe the canal. (Ref. 5, 192-195; 6, 167-168.) Why was it easy for the Allied fleet to prevent the escape of the German fleet?

(2) Activity in the Baltic Sea

How did her position in the Baltic Sea give Germany an advantage over Russia? What two large cities of Russia were attacked? Locate Finland. Show how Germany was able to help Finland free herself from Russia. Was Finland any more independent than before? Describe Finland. (Ref. 4, 321-327, May, 1918.)

(3) Inability to protect German supplies

At the outbreak of hostilities all German merchant ships put into neutral ports to be interned during the war. Why? Could Germany receive supplies from the outside world? When the United States seized a large number of German ships in our harbors and used them for shipping war supplies, how did that affect Germany?

(4) Failure to protect German colonies

Locate the colonies that Germany held at the beginning of the war. Could Germany call on her colonies to increase her man power? Show how removal of Germany from East Africa would be an advantage to the British Empire. What British colonies have sent troops to Europe? What colonial troops has France had at the front? What United States possessions could contribute troops?

(5) Protection of the German coast

Compare the length of Germany's seacoast with that of the British Isles: with that of France. Can Germany be effectively attacked from the sea? When the German armies were driven from the Belgian coast, why was it such a menace to the German troops in Belgium?

(B) Submarines

Why were submarines the most active part of the German navy? In what waters did they specially operate?

V. *Merchant marines*

(A) United States

How did the Allies protect their transports and their supply ships from submarines? What advantages has a submarine in attack? Disadvantages? Why was it necessary for the United States to build many destroyers and battleships? Did the Germans sink the ships of neutral nations? What effect did this have upon supplies of war material and food for the Allies? What was the comparative importance of the American merchant marine when the war began? (Ref. 7.) Compare it with that of the British Empire. Why did we say that food and ships would win the war? Locate our present shipbuilding sections. (Ref. 6, 36-39; 4, 69, Oct., 1918; 4, 254, April, 1917.) What advantage in building wooden vessels? In what way will our merchant marine be of great value after the war?

(B) United Kingdom

(a) Reasons for her maritime importance

(1) Coast line

Harbors. (Ref. 5, 34 (Glasgow); 5, 67 (London); 5, 65 (Liverpool); 5, 63 (Manchester)). Effect upon foreign commerce?

(2) Distances of places from the sea

(3) Fishing

Centers. Number of ships engaged. (Ref. 6, 285-286.) How has the fishing industry been affected by the war?

(4) English exploration (correlate with history)

(5) Need of food importation

(a) Agriculture as affected by physical features

(1) Surface

Extent of highlands: lowlands.

(2) Climate

(a) Temperature

Influence, in the growing season, of latitude, proximity to the sea, and prevailing winds. Trace the July isotherm to North America. Conclusion as to the kind of summers? In a similar way work out the January temperature. Conclusion about the severity of the winters?

(b) Rainfall

Effect of north and south trend of the highlands? Distribution of rainfall. Type of agriculture most suitable to climatic conditions.

(c) Effect upon crops

Make a list of important food and industrial crops that cannot be profitably produced in the British Isles. (Ref. 2, 354-355; compare production maps in Ref. 1.)

(b) Density of population

Population per square mile? Compare with New England. Compare with the United States (not including foreign possessions).

Conclusion about the amount of food produced compared with the amount needed? (Ref. 6, 235-236; 72-73; 2, 357, 577.)

(6) Need of raw material

(a) Raw materials found in the British Isles

Location of coal, iron, and tin. (See coalfields-and-cities map in Mark Jefferson's "Notes on the Geography of Europe," p. 12.) Production of wool and flax. (Ref. 2, 358-359.) Location of centers for the manufacture of these products into finished materials. (Ref. 2, 361.)

(b) Raw materials needed from other regions

Source of cotton, wool, silk, lumber, and rubber? (Ref. 2, 357-360.) Relation of importation to submarine campaign.

(7) Markets

Why does the United Kingdom send so much of her manufactured goods to her colonies? To South America? To other markets? What means of transportation are needed for this trade?

(8) Shipbuilding

Location of important shipbuilding centers. (Ref. 6, 21-25, 55; 2, 362.) Compare development of shipbuilding in the United Kingdom with that in the United States. (Ref. 3, 573.)

(b) London as a distributing center

(1) Location at the head of tidewater

(2) Importance as a port. (Ref. 2, 363.) On an outline map trace the main steamship lines from London to Odessa with branches to principal southern European ports. Trace the line from London to Archangel with branches to Baltic and North Atlantic ports. (Ref. 6, 92-95.) Show what lines extend to other continents. (Ref. 1.)

(3) As a railroad center. On the same outline map trace the most important of these railroads.

(C) Germany

What was the comparative importance of the German merchant marine before the war? What became of it? How came the United States to get possession of so many German merchant ships?

(D) Norway

This nation has lost more merchant ships by submarines than any other neutral country. Norway has a large share in the carrying trade of the world. (Ref. 2, 564.) Why?

(a) Location of the Scandinavian peninsula? Waters separating it from the mainland of Europe?

(b) Surface

Extent and trend of the highlands? Slope on the east? On the west? (Ref. 5, 164-165.) Location of the lowlands? Their extent? Their latitude? Effect of this upon the importance of agriculture on the peninsula? Crops grown? (Ref. 2, 390-392.) Location of the cities?

(c) Open ports

What part of the eastern coast of North America is in the same latitude as the western coast of Norway? Explain why the ports of Norway are not closed by ice in the winter. (Ref. 5, 168.)

(d) Fishing

Its great importance. (Ref. 6, 262-268; 5, 165-166.)

(e) Explorations of the Norsemen (correlate with history)

(f) Forests. (Ref. 5, 176-177; 6, 260.)

(g) Manufacturing

What raw material is found in Norway? Kind of manufacturing?

Summarize the conditions that make the Norwegians a seafaring people and great shipbuilders. Why has the destruction of so many of her ships been particularly disastrous to her? Why has Norway favored the Allies rather than Germany? Compare Sweden and Norway in this respect. Why has Sweden been more favorable to Germany than to the Allies? What trade relations exist between Sweden and Germany?

VI. *Effect of physical features upon the military movements of Europe*

(A) Great northern plain of Eurasia

(a) Extent

Trace the plain from southern France north, then east. How far east does it extend? Comparative width in the east and in the west? What countries are wholly included? Partially included?

(b) Slope

Direction. Source of the rivers? Number and location of the drainage basins? Where is the highest part of the plain? What would indicate that the rivers are navigable?

(c) Effect on military movements

(1) Western front

Locate the plateau of the Ardennes and the Vosges Mountains. What obstacles do they oppose to the invasion of France from the east? Why did Germany invade France by the plain

north of the Ardennes, that is through neutral Belgium? Why were the German forces able to move so rapidly through that country? How far from the German frontier is Brussels? Paris by this route? On a map showing the farthest advance of the Germans on the western front find where it ended on the coast of the North Sea. How far from London? Menace to England? Why did the Germans invade Belgium rather than Holland? What natural protection does Holland possess? Note use of dikes in defense of Flanders.

Locate Metz. What is the distance to Paris from Metz? (Ref. 4, 65, Nov., 1914.) Trace the gap at the northern end of the Vosges Mountains occupied by a canal passing through Nancy and connecting the Rhine at Strasbourg with the Marne. What obstacles are met on the roads from Metz and Strasbourg toward Paris? (See map from W. M. Davis's "Handbook of Northern France" in *Journal*, Oct., 1918, p. 78; also block diagram (Fig. 1, opp. p. 4) in D. W. Johnson's "Topography and Strategy of the War," New York, 1917.) Take Verdun as an example of the natural defenses of France between the Ardennes and the Vosges.

At the southern end of the Vosges is another gateway into France (Burgundian Gate) occupied by a canal connecting the Rhine and the Rhone. Why was not this a favorable route towards Paris?

The two canals mentioned above cross Alsace-Lorraine. Examine the position of this territory, now restored to France. When was it lost to France? For what commercial reasons was France desirous of regaining it?

Source of the Rhine? Importance for navigation? Use during the early development of European commerce? (Ref. 5, 234-236.) In what country is the mouth of the Rhine? What disadvantage to Germany?

Make a sketch map of France and Belgium showing all the principal rivers with their tributaries and canal connections. (Ref. 2, 372.) In the war region show these rivers: Seine, Marne, Oise, Aisne, Meuse, Somme. In their advance on Paris why did the Germans attempt to follow these river valleys? Indicate the location of Bordeaux, Paris, Havre, Dijon, Lyons, Marseilles, Nancy, Verdun, Rheims, Soissons, Amiens, Calais, Lille, Brussels, Antwerp, Liége, Roubaix.

(2) Eastern front

How much of European and Asiatic Russia is included in the northern plain? Are there any barriers across the plain between Russia and Germany? Why was the German invasion

of Russia confined to the western part? Locate Poland; Warsaw; Galicia. Why were the Russians able to overrun Galicia but unable to advance farther into Austria-Hungary?

(B) Highlands

(a) Germany

Surface of southern Germany. What difficulties in surface conditions would have been met by the Allies if they had made a drive on Berlin from Metz? Point out the easiest route. What rivers would have to be crossed?

(b) Austria-Hungary and Italy

Names and location of highlands and lowlands of Austria-Hungary. What mountains on the Italian border? Find illustrations of the trying experiences of the Italians in crossing the Alps. (Ref. 4, 295-297, April, 1918.) Why would it be difficult to attack Austria-Hungary from the sea?

The Austrians crossed the Alps and almost reached Venice. Describe this city. Located in what lowland? What river flows through the plain? From a war map indicate the farthest advance of the Austrians. Locate the capital of Italy. What protection has it from enemy land forces? At what time in history was Rome a great military center? (Ref. 5, 421-428.)

(c) Balkan Peninsula

Names and location of the Balkan states from a recent map (later than the Treaty of London, May 30, 1913). Which were fighting for the Allies? The Central Powers? From a map prior to 1912 find how much of Europe was included in the Turkish Empire. Compare the boundaries of Turkey on the more recent map. Locate Adrianople (about on the western boundary). What new state was created out of former Turkish territory? What Balkan states were increased in size by additions from European Turkey? Why are military campaigns difficult in the Balkans? Locate the capital of each state. The most important port for landing troops and supplies is Saloniki: locate. Why did Greece hesitate so long before joining the Allies?

(C) Form of the coast

Gallipoli campaign. Through what waters would a British warship pass in going from England to the Black Sea? On a large scale map locate Constantinople. To whom does it belong? Description of the Bosporus. (Ref. 5, 361-364.) Locate the Gallipoli peninsula: the Dardanelles. What waters are connected by this strait? What nation controls the territory on

either side of the channel? Why was the campaign a failure? Make a sketch of this region. Why was the Russian fleet unable to get out of the Black Sea? Russian troops were sent to France to help the Allies on the western front: what difficulty in sending them from Petrograd by way of the Black Sea? Overland by rail to France? On transports by way of the Baltic Sea? From Petrograd by rail and sea through Vladivostok? By sea from Archangel? How would control of Constantinople and the waters between the Black Sea and Aegean Sea be of great value to Russia?

VII. *Food production in Europe*

(A) Northern plain

(a) Crops

On an outline map trace the boundaries of the plain. Make out a table showing the chief crops of each country that includes any part of this plain. Mark with a cross the crop of special importance in a particular country. (Ref. 2, 366-369, 375-379, 386-389, 398-403; 4, 97-101, Dec., 1914; also Finch and Baker's "Geography of the World's Agriculture," reviewed in the *Journal* for Jan., 1919, p. 39.) Crops common to nearly all? Why do the Allies not use corn (maize) for bread?

(1) Temperature

Examine latitude, direction of slope, trend of the southern highlands, direction of prevailing winds, and lack of north and south barriers in relation to summer (July) and winter (January) temperatures and rainfall on the European plain. How does distance from the Atlantic Ocean affect the winter temperature? The summer temperature?

(2) Rainfall

Why is the rainfall greater in the west than in the east and southeast? Compare with climate across the United States from east to west. Reason for the difference?

(b) Width of the plain

Average width at the western end? About what proportion of France and Germany is suitable for agriculture? Width of the plain at the eastern end? What proportion of Russia is suitable for agriculture? Locate four zones of climate and vegetation in Russia. (Ref. 5, 315-317.) How does this affect the agricultural resources? (Ref. 2, 309-403; 6, 126-141.)

(B) Hungarian plain

Compare the farm products of the Austrian and Hungarian plains with those of the northern plain. (Ref. 5, 282; 2, 394; 6, 214-215, 218.)

(C) Mediterranean countries

Locate the Po valley. Describe it with reference to agriculture. Why is irrigation practiced so extensively? Locate the Austro-Italian battle line with reference to the Po valley. What would Austria gain by capturing this valley? Crops on the Mediterranean part of Italy? Compare with the products of southern California. At what season of the year does the rainfall occur in peninsular Italy? Why? (Ref. 2, 406-410.) How would the summer drought affect the grasslands? Would it be an important dairy region? Why are goats raised extensively? What substitutes are used for milk and butter? (Ref. 6, 297.)

Products of the Rhone valley in France. Compare with those of Italy. Climate of the valley? Reason?

Locate four great river valleys in Spain. Other lowlands of Spain. Compare the climate and products of this region with those of Italy and the Rhone valley. Contrast of the climatic conditions in the interior of Spain and those in the lowlands. Is the interior important for agriculture? What are its products? When General Pershing was in need of many woolen army blankets he ordered them from Spain: why?

Were Spain and Portugal neutral? Locate the capital of Spain. Could it be easily captured in time of war? Are most capitals so situated?

Examine the products of other countries around the Mediterranean Sea. Make a summary of the climatic conditions and characteristic products of a country having a Mediterranean type of climate.

VIII. *Food requirements of the European nations at war*

In peace times Germany imports much meat and wheat. Make a list of important foods that she is not able to produce. Why could she not import foods from countries outside of Europe? When Rumania and Russia made peace with Germany what agricultural products did that release for Germany and her allies? What foodstuffs could the Netherlands supply? (Ref. 6, 226-230.) What raw materials for manufacturing could Germany furnish in exchange for food from Holland?

Determine the density of population in Belgium. Is Belgium able to raise enough food for her own use?

Why have the neutral countries Holland, Norway, Sweden, and Spain been short of food and other imported supplies, although they had plenty of ships and were not in the war?

IX. *Industrial centers for producing war material*

For winning the war the man with his tools in the shop was of as much importance as the soldier with his rifle in the field. Make a list of things used at the front to show the importance of metals, machinery, and mechanics. The region of the western European plain including northern France, eastern Belgium, and western Germany is the greatest manufacturing center in Europe.

(1) Northern France

Coal and iron deposits. Compare with England.

Production of wool. Locate the sheep-raising district of France. Importation. Trace the steamship lines to important wool-growing regions outside of Europe. Where is cotton obtained? Locate a port at which cotton and wool are received. Centers of manufacturing. Artistic skill of the people as shown by the character of the goods they make.

(2) Belgium

Locate mineral deposits. Kinds of manufacturing? Centers? Raw material that is imported? Through what port? How does the level surface of the country affect the distribution of industrial cities? (Ref. 5, 126-129.) How did the seizure of northern France and Belgium give the Central Powers a great advantage at the beginning of the war?

(3) Germany

Importance of mining. Location. Manufacturing cities along the Rhine. Location of the Krupp works at Essen, where the German guns were made. (Ref. 6, 169.) Source of the cotton, wool, and silk? What port at the mouth of the Rhine? In what country? What disadvantage is this to Germany? Locate the most important German port. Why was there a great shortage of raw materials in the country? Other industrial centers in Germany?

Examine also the conditions of industry in Austria-Hungary, Italy, Russia, and Spain.

X. *Mode of life in the rural districts of Europe*

Make a comparative study of the habits, customs, and work of the European farmers, comparing with conditions in our own country. Use supplementary reading and as many illustrations as possible.

Topics

(1) Roads

(2) Size of farms

(3) Ownership of land

(4) Village life

(a) Relation to farms; streets; houses and barns; thrift; dress; schools.

(5) Summer work

(a) Lack of labor-saving machinery. Reason? Effect of handwork on financial returns; woman's part in farm work.

(6) Winter work

References: France, 5, 88-95; Belgium, 5, 125-126; 2, 370; Denmark and Holland, 5, 140-144, 162; Germany, 5, 224-225; 6, 184-188; Austria-Hungary, 5, 303-305; 6, 211-214; Russia, 5, 320-330; 6, 130-133, 135, 139; Italy, 5, 403-405; Sweden, 5, 178-180; Ireland, 5, 17-21; England, 5, 50-55; Spain, 5, 429-435; Turkey, 6, 380-381.

XI. *Comparative study of the governments of Europe*

(1) Form of government

(2) Representation; powers of the executive

(3) Historic changes

XII. *Races of Europe*

What different races represented and languages spoken? (Ref. map showing races, *Natl. Geogr. Mag.*, Vol. 34, Dec., 1918, and maps in Frontiers of Language and Nationality in Europe by Leon Dominian, American Geographical Society, 1917.)

Locate Finland, Baltic Provinces, Lithuania, Ukraine, Poland.

What part of Europe is occupied by the Czecho-Slovaks? The Yugo-Slavs?

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Throughout valuable suggestions may be found in "The Geography of Europe," edited by Ellsworth Huntington and Herbert E. Gregory, Yale University Press, 1918, reviewed in the *Journal* for March, 1919, pp. 118-120.

ORGANIZATION OF AN IDEAL COURSE IN GEOGRAPHY*

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Assuming that geography in a restricted sense is the study of the relation *between* man and his environment and not the study of man *and* his environment, we shall try to discover the conditions underlying the organization of an ideal course of geographical study based upon the first of these conceptions.

While in the newer textbooks and newer courses of study there is an attempt made to induce thought work necessarily involved in the study of relations, yet an unprejudiced observer cannot but admit that the primary emphasis is still laid upon the acquisition of facts—that is upon man *and* his environment.

THE "FACT" METHOD

In the writer's opinion, the study of facts as facts, the drilling of children on locations, emphasized in almost every course of study in the United States, is not geography. Facts are the raw materials out of which true geographic concepts and knowledge are built up. They have a certain necessary function to perform in bringing about the end, which is geographical insight; but if they are made the end in themselves, true geography is never reached.

How often do we hear assertions that lack of drill is the reason for the shortcomings of the present geography teaching. A recent writer in the *Journal of Geography* says, "Drill is essential, and all our work would show greater efficiency if we drilled on essentials more conscientiously." This brings us to the question as to what are "essentials" in geography. From the point of view which the writer is advocating "essentials" or "minimum essentials" have no part in geography. As long as such ideals are held by leading teachers of school geography, no

* This is in sequence with the author's article "A New Definition of Geography" in the May number of the *Journal*.

agreement can be reached as regards the foundations of a new and rational geography.

Courses of study based upon the memorizing of facts can have no fundamental unity. The arrangement of each is determined by the complexion of the committee of teachers that has worked it out. One course may begin with the study of Europe, another with America, and a third with the state in which the school is situated. The one topic which they all have in common at the present day seems to be the much-abused topic "Home Geography."

The course of study in a prominent city in the Mississippi Valley plunges the children into formal globe study in the fourth grade without any preliminary home study. The fifth grade begins with North America, proceeds to the United States, and then comes back to the home state—an order just the reverse of what is natural and desirable. In the latter part of the fifth grade the World the "second time over" is begun and continued through the rest of the course.

THE "THOUGHT" METHOD

If we turn now from this confusing condition of affairs to the idea that geography is the study of relations, a flood of light is thrown on the whole matter. To take up the study of relations, in which the thought method plays the important rôle, we are limited to a pretty definite procedure. We cannot plunge the child directly into world study—involving distant and unfamiliar regions—without first having given him a basis on which to work. That basis is a usable knowledge of his immediate environment. If he knows nothing about the relations existing between the people about him and the little world in which they live, it is simply impossible to develop any intelligent conception of distant and unfamiliar places. All the child can do is to memorize facts about them.

THE BASIS OF HOME GEOGRAPHY

A noted geographer once said, "Wherever home is, there lie all the materials which are needed for the study of the entire globe." Another has said that "true knowledge can be built up

only by beginning with the home, with that which is already familiar and a part of experience, and using this as a basis for gaining an understanding of that which is remote and unfamiliar." This is an elemental principle of education but is unfortunately overlooked by most of those who are responsible for our courses of study.

The surroundings of the home may at first sight seem to offer small basis for building upon experience, yet there is always far more at hand than is realized until search for it is made. The home experience should be aided by the study of pictures, by lantern slides, and by supplemental reading in order to lay the foundation necessary for reasoning about life conditions in distant places. Physical maps of the home region, followed by similar maps of distant regions, are absolutely necessary to the success of the thought method. When good maps are used the results are surprising. The writer has taken a demonstration class of children before teachers in a summer school and, beginning with a number of lessons upon the relief map of California, has then placed before them a relief map of Europe and, using Spain, has developed from the children themselves, without telling them directly anything about the country, an intelligent conception of life conditions existing there.

A Progressive Course

Considering now a course of study based on the thought method, we shall first cut loose from the "second-time-over" plan. No idea more wasteful of time and energy has ever found lodgment in our school system than the belief in the necessity of repeating the same thing in a formal manner two or three times, commonly with the same method and from the same point of view. It seems to the writer that to go over the world in the fifth grade and then literally repeat the same thing in the sixth is indefensible. A progressive course based on a correct pedagogy running through the grammar school will accomplish far more than a second-time-over course in which world study is formally undertaken in the fourth grade, before the child is mentally prepared for it, and then repeated in the two following grades.

A progressive course, based on the thought method and paying special attention to making the study appear worth while to the child, demands that much more time be devoted to the immediate environment and the larger natural region in which the pupil lives than we are accustomed to give. It requires so much time that at first thought it may seem to unbalance the course.

FOURTH-YEAR WORK

The ideal course gives the first half of the fourth year to a study of the environment and the acquisition of general notions of the natural region or state in which the school is situated. Ordinarily, however, state boundaries should be neglected at this stage. The second half of the year is given to a general survey of the world, using any motive that will appeal to the child, such as the source of the products used in the home or neighborhood and the routes over which it is necessary to travel in order to reach the various countries from which they come. A globe should be used, and the various important countries of the world should be talked about in such a manner that the child may come to understand why we have important dealings with some of them and very little to do with others. The people, their customs, and the reasons why they live as they do should be discussed. The year's work is built up in such a way that the child is oriented as regards his home and the world at large and becomes prepared to take up more formal work in the fifth year.

FIFTH-YEAR WORK

The next step, occupying the larger part of the fifth year, should be an intensive study of the state or natural region in which the school is situated. The intensive study of the home has a double value at this stage. It gives the pupil a knowledge of the region in which he lives with sufficient detail to be of some practical value in life if he drops out before completing the grammar school; and, if he continues, it forms the necessary foundation for real world geography.

The general world notions gained in the fourth grade in the progressive course together with incidental references to various parts of the world which come up in connection with the study

of current events give all the general knowledge that one who leaves school early will retain.

LATER WORK

The amount of time that can be given to the study of the different continents must depend upon the length of the geography course. If geography is carried to the middle of the eighth grade, as it should be, the time schedule can be worked out very satisfactorily. North America should be taken up in the sixth grade, because that is the most important continent for us. Then the others should follow in order of relative importance—South America, Europe, Asia, Africa, Australia being the natural order.

The effort now being made in some quarters to close the study of regional geography with the sixth grade is a backward step which all who have a real insight into the possibilities of school geography should oppose with all the energy possible. We stand now at the parting of the ways in geography teaching. If we would see the subject occupy the place it should in the schools, we must get rid of the indefensible memory methods with their negative results and substitute a method which develops real thought and is of permanent cultural value.

NOMAD SCHOOLS AND A SCHOOL IN THE DESERT

In the consolidation of her great African Empire France is adopting as far as may be a policy of "peaceful penetration." The road and the railway, the market, hospital, and school are the means whereby she seeks to gain the control and the confidence of the native peoples under her protection. A first place among these civilizing instruments is given to education; and among the educational schemes first place, at least in interest, must be given to the nomad schools of French West Africa (Les écoles nomades du Haut-Sénégal et Niger, *L'Afrique Française,* Vol. 29, 1919, pp. 75-76).

The schools, two in number and now in the second year of their foundation, are for Tuareg tribes living west of Timbuktu

where the northern fringe of the Sudanese grassland meets the desert. The Tuareg is a nomad. His wanderings, governed by the pastures, the water supply, the habitudes of that enemy to the flocks, the tse-tse fly, and other minor circumstances, are constant and without arrest. As the child, then, cannot go to the school, the school, Mahomet-like, must come to the child and follow the encampments in their wanderings.

The teacher of the nomad school is provided with the customary skin tents of the Tuareg, one for himself and one for the school, and the administration furnishes the simple school equipment used. The scholars are described as disciplined, attentive, studious, and in general very intelligent. After a year's schooling the majority of them can speak and write at least a little French, can read and do some simple arithmetic. From time to time little rewards are given them for their zeal and progress: not, of course, the prize book of our schools, but such desirable things as a short length of cloth or a little piece of loaf sugar.

It is too early as yet to say much of the experiment, but if it succeeds it will be a potent agency in the pacification of what is perhaps the most backward element of the Sudan, certainly that most defiant and elusive of civilization.

While speaking of these nomad schools we may also note an interesting school experiment carried on in the absolute desert. It is briefly described under the title "A Copper Mine School in South America" in *School Life* (U. S. Bureau of Education) for July 16, 1919. The copper mine, presumably that of Chuquicamata exploited by the Chile Exploration Company, is situated in northern Chile. To this spot, so destitute of all resources for human support, a population of 12,000 people has been attracted. This includes a considerable number of children both of the British and American officials and of the Chilean laborers, and it has created a school problem. Describing its peculiar difficulties the American organizer engaged by the mining company says:

> The situation in the desert brings up many problems not faced elsewhere. My greatest single effort was the beginning of small school gardens in the desert. These were a complete success. Inasmuch as such vast tracts of Peru, Bolivia, and Chile comprise this desert, dotted at intervals with hives of human industry, usually owned and operated by foreigners, the effort to reclaim tiny bits of arid waste is becoming more and more impor-

tant. Its beneficial effect upon the school population is evident. I look forward to the time when everyone of these human hives can be seen from afar by touches of green fostered and preserved by the efforts of children.

FLYING FISH

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Flying fish have always interested me very much. I have known them since an early voyage to Brazil on the *Finance* in 1883. I remember how we used to dispute about their manner of flight, whether they soared on rigid wings, airplane-like, or flew with fins flapping.[1] The *Finance* was not one of the big steamers of these days. She was of 3,000 tons. At her fo'c'sle head, where I loved to perch to watch the flyers, one was not more than fifteen feet above the water, and the fish came up, as they will in the West Indies and tropical Atlantic waters, in schools. A good many voyages have been made since that time and nothing interests me more in the abundant life of the sea than the flyers, and I note herewith some recollections and the observations made in June, 1919, on the *Patria,* about halfway from Gibraltar to New York.

Flying fish belong to the blue and rather warm waters. As I have seen them, they appear to range from a greatest length of about 11 inches to almost nothing. Some of them, at times numerous schools of them, are hardly as big as dragon-flies. These I have seen only in the West Indies, often during a voyage made in February, 1895. I am not certain whether the tiny ones are seen at other seasons of the year. All that I have seen on this voyage up to the present have been between 6 and 11 inches in length.[2] They are very good to eat, without being a delicacy, and

[1] The question of the character of the flight of flying fish still remains unsettled. Professor Jefferson writes that these notes are made without reference to the literature of the subject. Some of the chief contributions to the literature are summarized by Theodore Gill: Flying Fishes and Their Habits, *Ann. Rept. Smithsonian Institution for 1904*, pp. 495-515. The true flight theory is supported by C. D. Durnford: Flying-Fish Flight, and an Unfixed Law of Nature, *American Naturalist*, Vol. 40, 1906, pp. 1-11.—EDIT. NOTE.

[2] The next day after these words were written we saw little fliers less than two inches long.

are often to be had in the West Indies. Steamers frequently have them on their menu. I do not know how they are taken or whether they are on sale in the markets.[3] I do know, however, that they often come up on the decks of small vessels.

How much the wind and the waves enter into their power of flight and its method is one of the disputed points which I believe these observations should serve to settle. My previous recollections of them are from the trade-wind zones of the Atlantic and southern Pacific. In those zones fresh winds prevail and raise sizable waves which break into abundant whitecaps. These are as characteristic of the trade-wind oceans as the deep blue, very salt water and the white, fleecy clouds that drift rapidly across the sky. In those waters the flying fish seem to dart out of the side of a wave and plunge into another at the end of their flight, as if they might have happened out into the air while meaning to swim within their element, just because the water was flung up into wave form. They usually remain in contact with the water for ten or fifteen feet before getting clear into the air and remain similarly in contact on re-entering. This fact is beyond question. Often the fish touch the water and rise again, sometimes with and sometimes without a change of direction.

The most interesting item in the observations of the present voyage is that during the last two days they were made during an absolute calm and an opera glass was used in studying the fish. In the glassy water, undulating in gentle swells, the fliers were constantly observed. While they were hard to distinguish against the deep-blue glassy water, we certainly saw one every twenty minutes that we watched. They never came out in swarms here, although on the following day with whitecaps at least one school of more than twenty fish was seen. Their greater abundance in rough weather is due partly to the greater disturbance the ship then communicates to the water. This disturbance is what starts the fish into flight. I am sure they are frightened. Probably any observer on a still vessel in a calm sea would see none fly.

From the still water they always came out singly. They invariably rose within one hundred or two hundred feet of the ship and

[3] An interesting description of fishing for flying fish off Barbados, where it is a regular industry, is given in the article by Gill cited in footnote 1.—EDIT. NOTE.

made away, sometimes at right angles, oftener at a smaller angle forward but never, as far as I have noticed, directing their flight backwards. I think I have never seen them come up at a distance or move toward the ship except when a strong wind flung them toward it. That is probably how they come up on deck at times.

While in earlier observations the fish were seen to fly only to the windward, careful observation throughout today, with the wind strongly on our quarter, showed the flights of fish as abundant to leeward as to windward. Apparently they have no need of waves to start from. They came readily out of the smooth, glassy sea of yesterday. It was evident that they flew especially close to the water. Today in the wind they do *not*. I am certain the wind enables them to rise higher and I think that they fly much further than they do in calm weather. That in rough water they seem to plunge out of and into the sides of waves is not strange, for, of course, the crest lines of waves make up very little of the surface of a rough sea. Mostly it is made of wave slopes. A great standing wave springs off on each side of an advancing steamer. In the glassy water these were long, smooth ridges of the loveliest blue, rising to a sharp crest that every now and then flashed into a feather edge of white foam. Here was an excellent chance for the fliers to get their jump into the air, but they never took advantage of it. One did not see their actual emergence, but the fretwork of tiny ripplings of the water surface that sprang to right and left from their beating wings betrayed them at once against the glassy surface and enabled one to locate the point of emergence with the utmost precision. Then, with the glass, they could be easily picked up and their wing fins watched.

They have, of course, two pairs of fins, long ones (pectoral) and short ones (ventral). The long fins may be half as long as the whole fish. These are the ones that vibrate. With the opera glass this vibration is seen very distinctly; it is nothing like so fast as the motion of the humming bird's wings. The short fins, I think, do not move. Nor do the long ones flutter all the time. Usually they flutter during emergence, which, as I have said, lasts for some fifteen feet of flight; but on the long flight the wing fins are quite motionless, and the fish really soars. With the glass

this has been made out beyond question, and a fellow observer beside me agreed absolutely in this statement. When the fish rose again after touching the water, it invariably beat the water with fluttering fins.

Flying fish do not seem to have much strength of flight, such as a bird displays. Often, as in passing the Azores two days ago, one catches sight of the sturdy Mother Carey's chickens over the waves as they watch for the fliers, and nothing could be more striking than the contrast. The bird always hovers, darting and changing direction. The fish always moves in the direct line of propulsion, like a thrown ball. Like that, it may describe a slight curve or rebound on touching the water, but never is there in the flight of flying fish any resemblance to the hovering or fluttering about of small birds. Neither is there any resemblance to the soaring of the hawk which is spiral and circling; yet the fish certainly soars. There is the closest possible similarity, both in starting and landing, to the motion of an airplane.

FERREL'S LAW AND ARTILLERY FIRING

It is well known that, according to Ferrel's law, the earth's rotation deflects winds in the northern hemisphere to the right and, in the southern hemisphere, to the left. During a classroom discussion, the question was raised as to whether this deflection of moving bodies is of sufficient importance in artillery operations to demand that allowance be made for it. Through the courtesy of the War Department, there was brought to the writer's attention the paper: "Effect of the Earth's Rotation Upon Point of Fall," by Major Fred M. Green and Major C. W. Green, Journal of the United States Artillery, May–August, 1918.

The authors conclude that, for a range less than about 20,000 yards (about 11 miles), corrections for the earth's rotation "will generally be less than the uncertainty due to other factors and their employment is therefore inadvisable." For calculating the amount of right-hand deflection, the procedure is as follows: multiply the angular velocity of the earth's rotation by the range time of flight in seconds, by the range distance and by the sine of the latitude.

F. V. Emerson

RECENT METEOROLOGICAL PUBLICATIONS

The war has greatly stimulated interest in meteorology and the teaching of meteorology. By a series of articles on the weather factor in the war published in the *Journal of Geography* (February, 1915, to April, 1918) and continued in the *Scientific Monthly* (February, April, July and October, 1918, and January, 1919) Professor R. DeC. Ward has forcefully demonstrated the importance of the weather in military operations.

Recognition of the importance of this physical factor may be seen in the demand for 600 meteorologists as soon as we entered the war. Few qualified men proved available and special provision for the immediate need had to be made by the Signal Corps. Forthwith a course in meteorology was included in the work of the Student Army Training Corps. To meet the requirements of the course the National Research Council, Division of Geology and Geography, requested officials of the Weather Bureau to prepare a textbook for use of the students.

Introductory Meteorology (Yale University Press, 1918, $1.00) is the result. The volume consists of a series of discussions of meteorological topics. It goes without saying that the matter and treatment are based on the most recent development of the subject but the amount of compression and the lack of cohesion between individual topics make considerable demand on the instructor. There is a short chapter on climate containing a useful classification of climates: otherwise the chapters are purely meteorological and technical.

Collegiate Instruction in Meteorology by Charles F. Brooks (Monthly Weather Review, Vol. 46, 1918, pp. 555-560) outlines a course in the subject. The following lines of work are recognized:

> (1) Daily instrumental and non-instrumental observations and non-instrumental observations to be recorded in a graphical, consecutive picture of the weather, and to be discussed briefly; (2) a systematic study of meteorology as a branch of physics, presented mostly by lectures; (3) laboratory study of instruments; various exercises; and practice in the construction of weather maps and in forecasting; and, possibly, (4) one or more special papers on meteorological topics.

Discussion of the observation work will be found useful by teachers in schools as well as colleges. Special note should be made of the illustration "Wall chart of the daily weather." Three general outlines of lecture courses are given. The first is that of Professor R. DeC. Ward's course at Harvard. This course is a prerequisite for climatological study and also has in mind the needs of students in geography and geology. The second is that of Professor W. J. Humphrey's work, "The Physics of the Air" which has appeared serially in the *Journal of the Franklin Institute* (1917 and 1918). A notice of the work appears in the article

"New Meteorological Books" (pp. 562, 563), in the number of the Monthly Weather Review noted above. Professor Humphrey's course is concerned with the mechanism of atmospheric processes, not with their geographical distribution or application. The third course is that adopted last year by Dr. Brooks at the Signal Corps School of Meteorology, College Station, Texas. In content this course comes between the other two.

The Weather Map by Sir Napier Shaw (Meteorological Office, London, fourth issue, 1918, price 4d.) is described as "an introduction to modern meteorology." It serves the purpose admirably. The "weather map" is treated in 54 amply illustrated pages, illustrations naturally being from the British Isles and western Europe. A climatological supplement gives climatic summaries of London, Paris, Balkan Peninsula (Philippopolis), Mesopotamia (Babylon), Egypt (Helwan), East Africa (Dar-es-Salaam).

Meteorological Glossary (Meteorological Office, London, fourth issue, 1918, price 1s.) is published in continuation of "The Weather Map." It is an invaluable work of reference for all interested in meteorology.

MASSACHUSETTS COUNCIL OF GEOGRAPHY TEACHERS

A meeting of the Massachusetts Council of Geography Teachers was held at Harvard University on May 17, 1919. Professor Wallace Atwood of Harvard University, Chairman of the State Council, presided over a large and enthusiatic gathering. The audience was addressed by Mr. Frank V. Thompson, Superintendent of Schools in Boston, who told of the New Opportunities in the Teaching of Geography; Professor William Morris Davis, who described the Geography of the Rhine Valley; and Professor Albert Bushnell Hart, who spoke on the New Countries of Europe.

At the conclusion of the speeches, the audience spent some time in examining a splendid exhibit of European war maps, including the Peace Conference maps, in the laboratories of the Department of Geography.

After the meeting lunch was served at the Colonial Club to about 40 teachers. The informal discussion around the tables was one of the most enjoyable and most valuable features of the day.

The State Council of 194 members was increased at the May meeting by 32 new members, making a total membership at date of 226. The number joining the National Council was 23.

NELLIE B. ALLEN
Secretary